

Remote Atmospheric and Ionospheric Detection System (RAIDS)

Mission Data Summary Image Quick-look Archive

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1. Products and Descriptions

RAIDS Middle Ultraviolet (MUV) Spectrometer, Raw and Calibrated Spectra

Measured spectra covering approximately 1900-3150 Å, viewing in the wake direction from the International Space Station.

RAIDS Near Ultraviolet (NUV) Spectrometer, Raw and Calibrated Spectra

Measured spectra covering approximately 2950-4000 Å, viewing in the wake direction from the International Space Station.

RAIDS Near-Infrared Spectrometer (NIRS), Raw and Calibrated Spectra

Measured spectra covering approximately 7250-8650 Å, viewing in the wake direction from the International Space Station.

Not included: 765, 630, 777.4 nm Photometer and EUV Spectrograph Data

Additional RAIDS sensors have not been processed, calibrated, geolocated, and packaged into NetCDF files for general use. Contact the PI for more information about these data.

2. Program Information

<https://www.nrl.navy.mil/ssd/branches/7630/RAIDS>

3. Instrument Details

<https://www.nrl.navy.mil/ssd/branches/7630/raids/sensors>

4. Data Summary Images

Summary images showing aggregate spectra and general data coverage, on roughly an orbit-by-orbit basis, are available for review at <https://www.nrl.navy.mil/ssd/branches/7630/raids/data>.

5. Caveats

- (1) Wavelength determination is based on ground calibration and in-flight spectra, although shifts on the order of ~1 pixel are possible in the actual positions for specific spectra.
- (2) Sensitivities are determined based on ground calibration measurements. While there has been no sign of degradation in any of these RAIDS sensors during the mission based on an evaluation of in-flight data, users are urged to provide feedback to the RAIDS team with information pertaining to possible time-dependent updates that may be necessary. Additional information is in Stephan et al., "Characterization of sensitivity degradation seen from the UV to NIR by RAIDS on the International Space Station", *Proc. SPIE* 8148, Solar Physics and Space Weather

Instrumentation IV, 814804 (September 29, 2011); doi:10.1117/12.894093;
<http://dx.doi.org/10.1117/12.894093>

- (3) MUV: Pre-flight sensitivity was only measured longward of 2030 Å. The calibration shortward of this wavelength has been equated to the measurement at 2030 Å to maintain raw data in the arrays for this spectral region, but the calibrated data as presented are not valid at these wavelengths.
- (4) Tangent altitude uncertainty is determined for each day by the statistical mean of the difference between the HREP star-tracker (HST) and the attitude from the ISS over times when both measurements are available. The HST has high measurement accuracy but only 1 s timing resolution. The ISS has sub-second timing precision but more lax accuracy in attitude knowledge. Additional information is in Budzien, et al. "The RAIDS experiment on the ISS: on-orbit performance", *Proc. SPIE* 8148, Solar Physics and Space Weather Instrumentation IV, 814805 (October 06, 2011); doi:10.1117/12.893962; <http://dx.doi.org/10.1117/12.893962>

6. Acknowledgements

RAIDS was integrated and flown under the direction of the DoD Space Test Program as part of the HICO-RAIDS Experiment Payload (HREP). RAIDS was a joint project of the Naval Research Laboratory and the Aerospace Corporation, with support from the Office of Naval Research, The Aerospace Corporation Independent Research and Development Program, and The Aerospace Corporation's Sustained Experimentation and Research for Program Applications.

7. Data Usage Policy

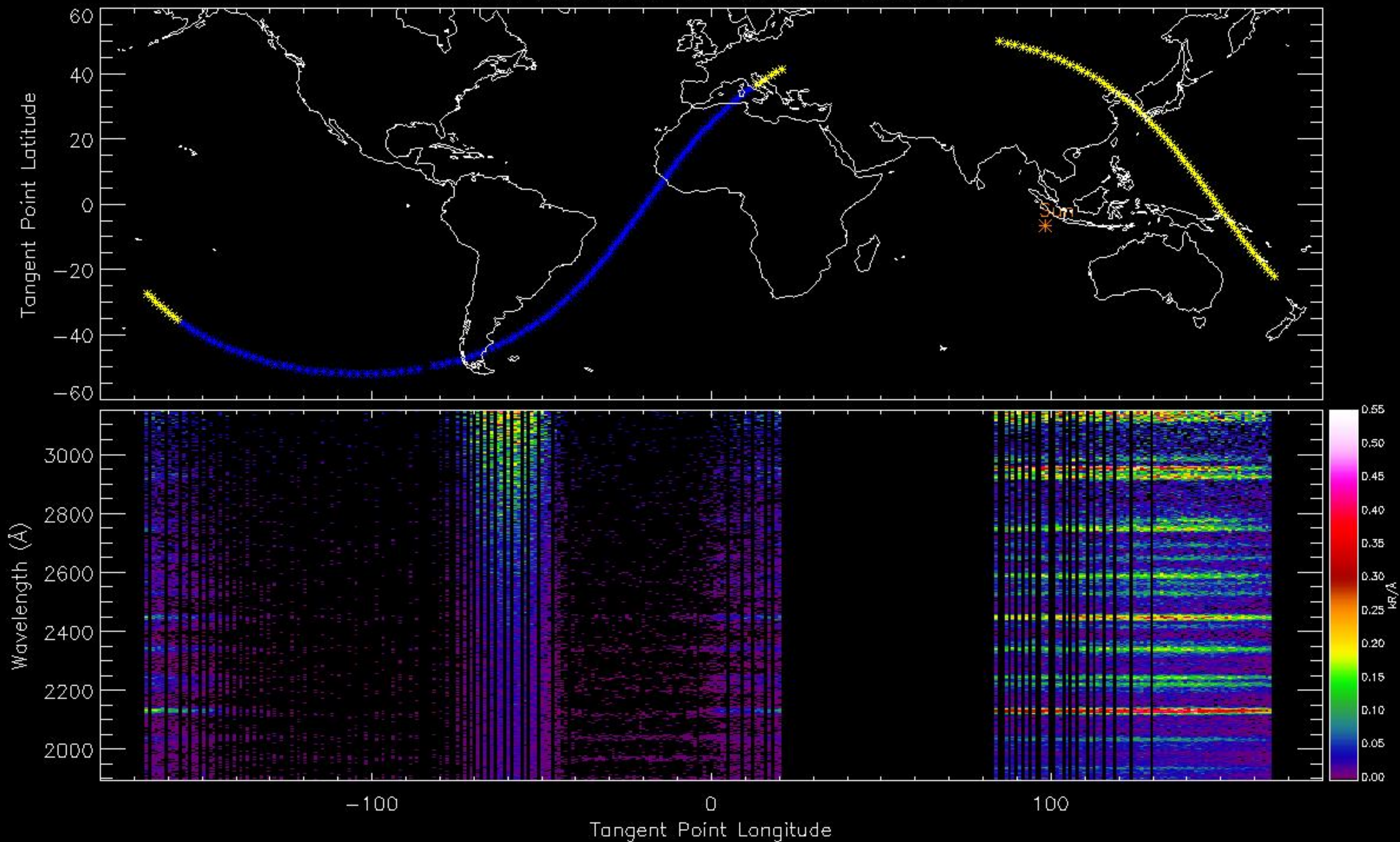
The RAIDS data made available through the SPDC are open to all. However, despite the large investment in time and expertise of the RAIDS team to collect and process these data, there may still be uncertainties and limitations of the data. Users are strongly encouraged to discuss their investigation and use of the data early on with Dr. Scott Budzien (PI, NRL, Scott.Budzien@nrl.navy.mil), Dr. Rebecca Bishop (Institutional PI, The Aerospace Corporation, Rebecca.L.Bishop@aero.org) or Dr. Andrew Stephan (Project Scientist, NRL, Andrew.Stephan@nrl.navy.mil). All users of RAIDS data are asked to respect the following 'Rules of the Road':

- 1) The PI must be contacted for authorization prior to publication or presentation of RAIDS data. Draft copies of all presentations, reports, and publications must be sent to a RAIDS team member, at least 20 working days prior to presentation or submission.
- 2) Users should heed the caveats of instrument scientists as to the interpretation and limitations of data. The RAIDS team may insist that such caveats be published.
- 3) Appropriate acknowledgement to institutions, personnel, and funding agencies should be given, including the Acknowledgements statement above.
- 4) Final copies of all presentations, reports and papers are to be sent to the RAIDS Team so that a Bibliography of RAIDS results can be kept up to date.

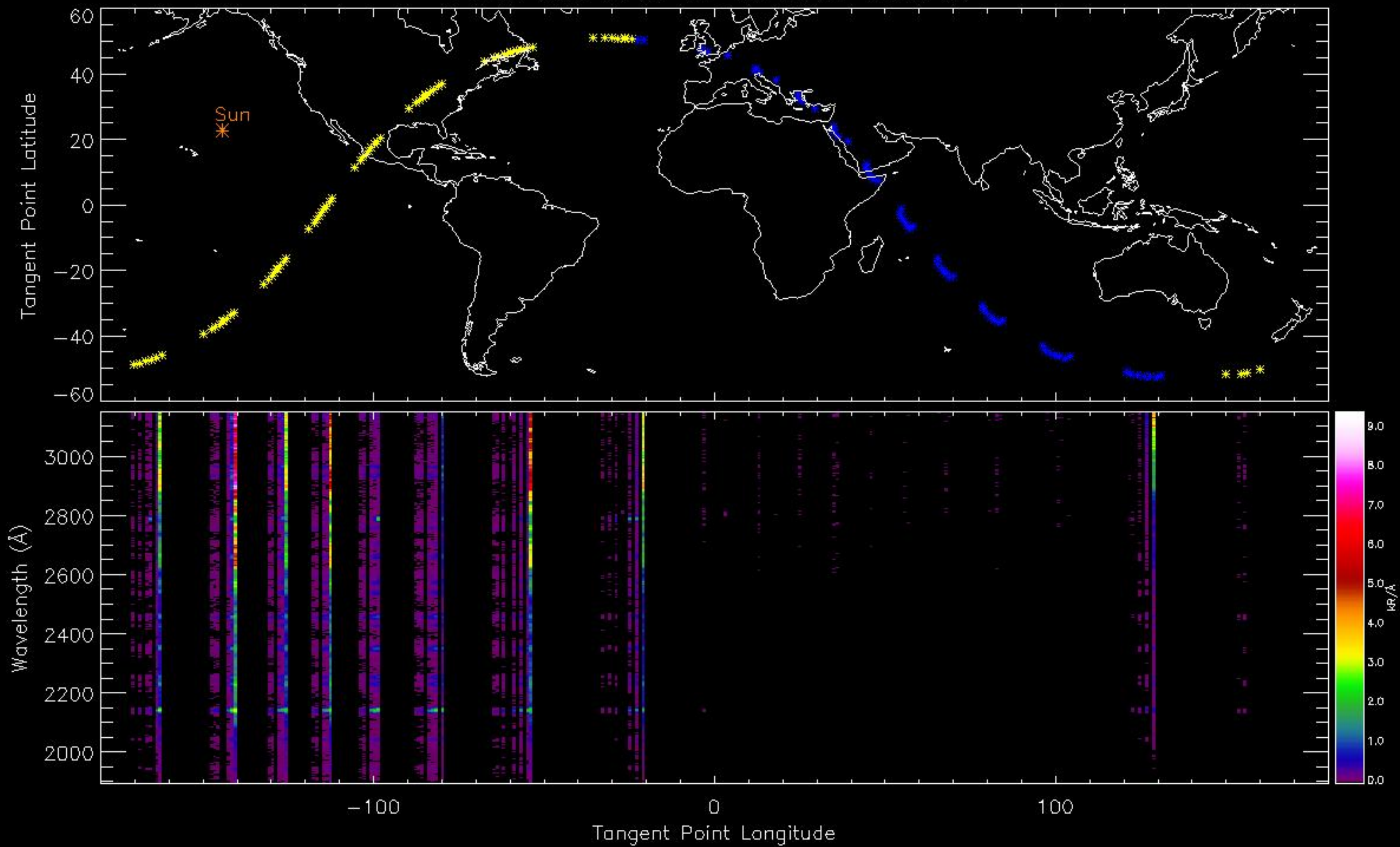
Middle Ultraviolet (MUV) Spectrometer Data Summary Images

The following two plots are examples of MUV spectrometer Data Summary quick-look images. There are an additional 3565 similar images.

RAIDS MUV 2009-10-10 0430-0600 UT



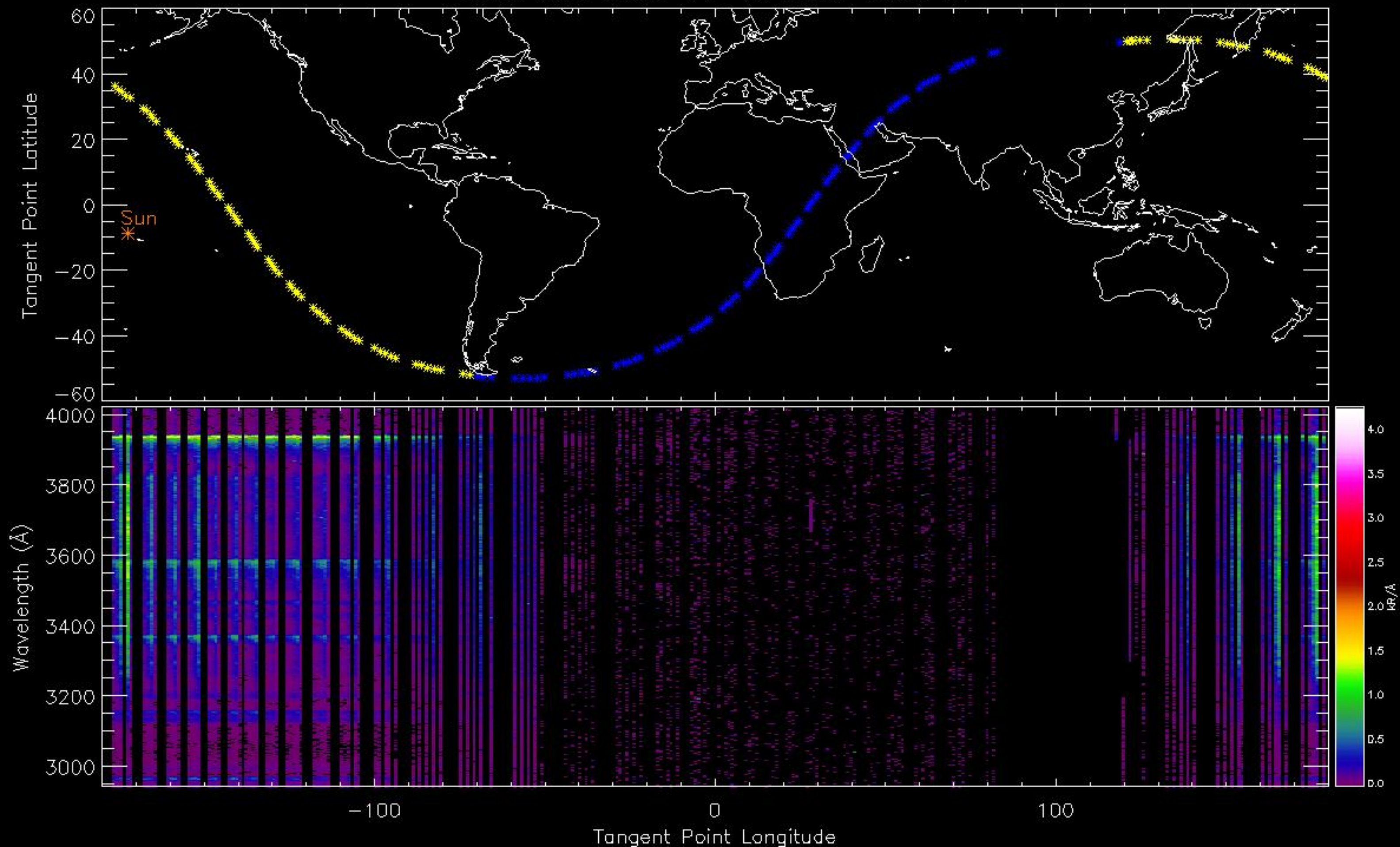
RAIDS MUV 2010-07-06 2100-2230 UT



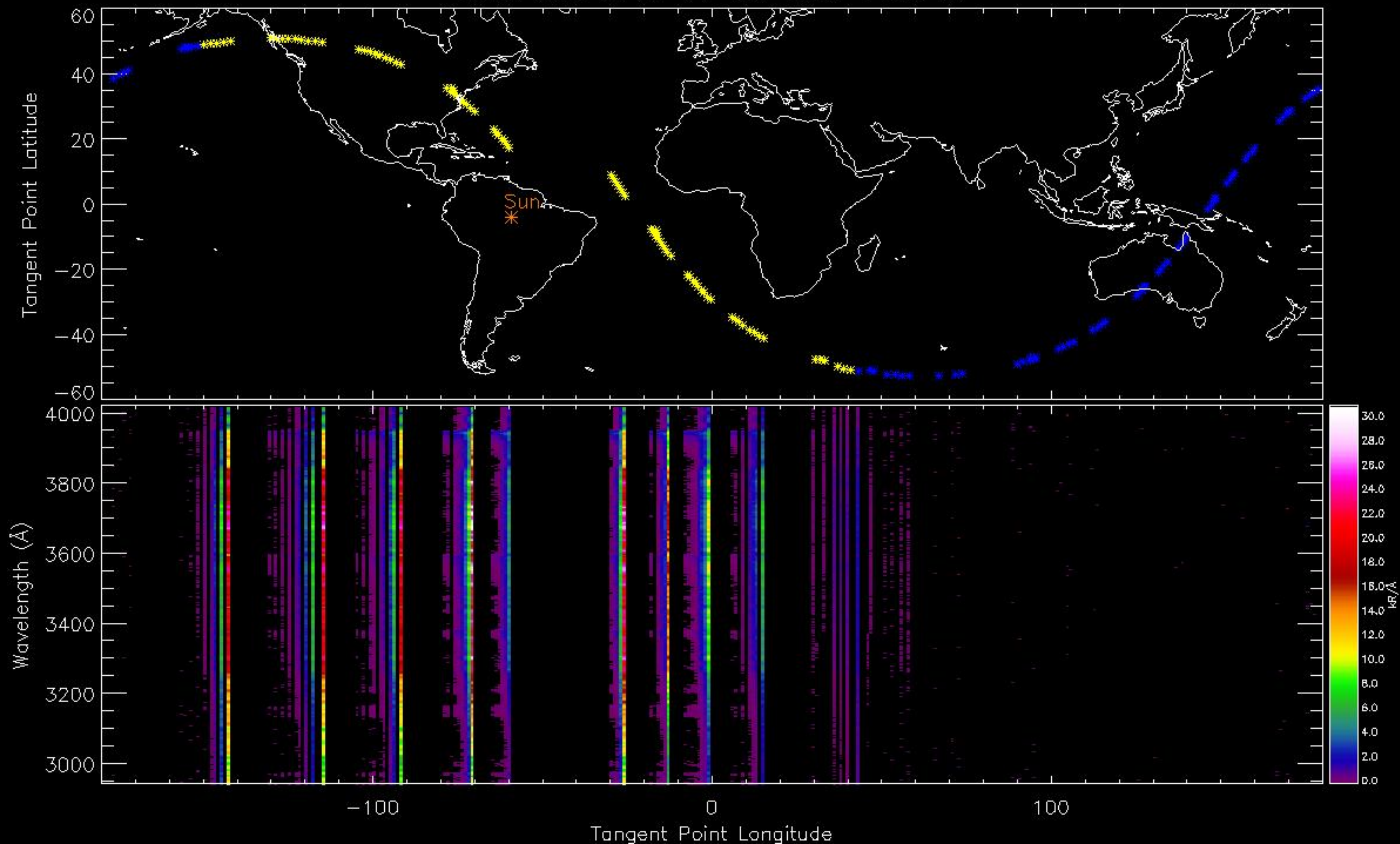
Near Ultraviolet (NUV) Spectrometer Data Summary Images

The following two plots are examples of NUV spectrometer Data Summary quick-look images. There are an additional 3508 similar images.

RAIDS NUV 2009-10-15 2230-2400 UT



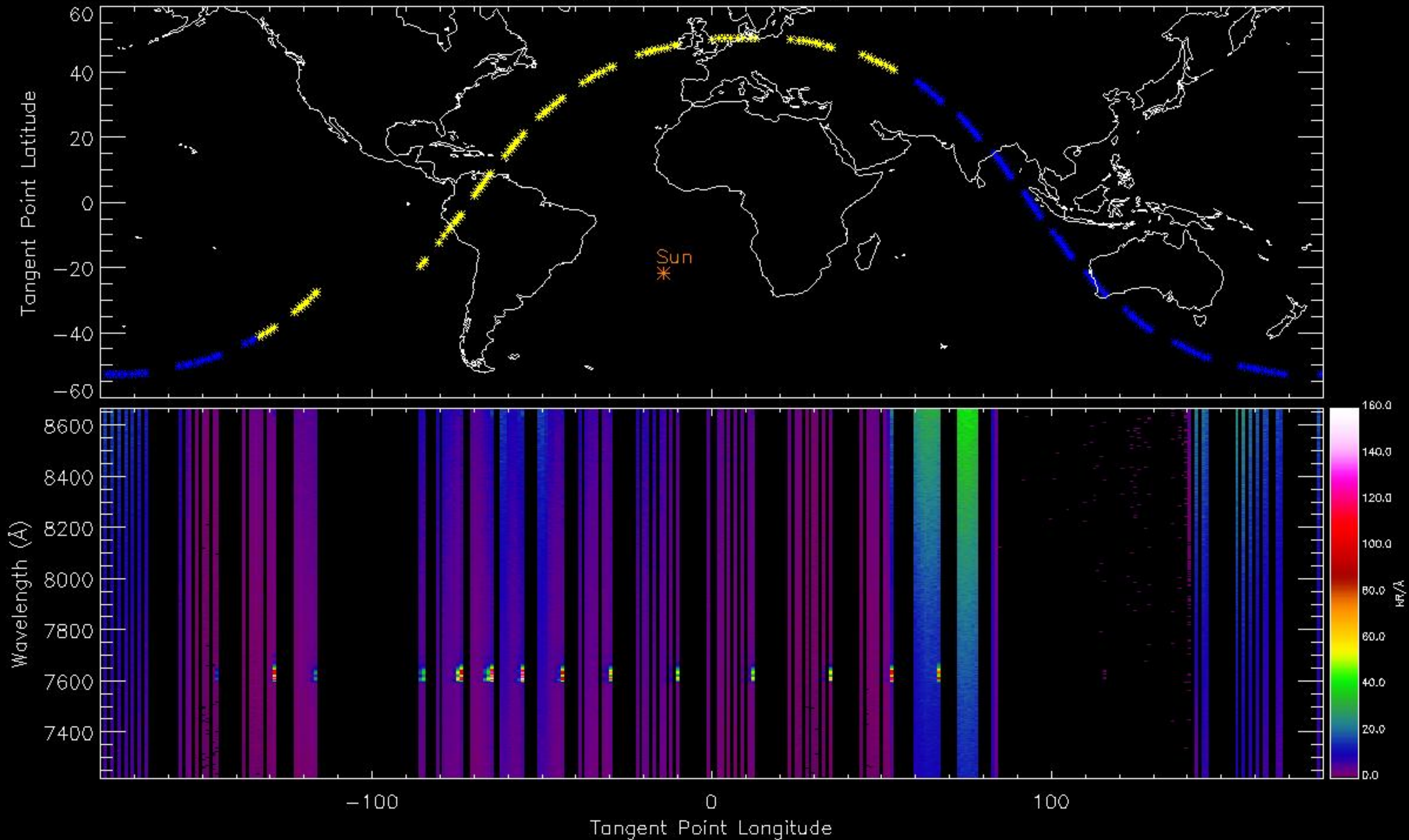
RAIDS NUV 2010-10-03 1500-1630 UT



Near Infrared (NIR) Spectrometer Data Summary Images

The following two plots are examples of MUV spectrometer Data Summary quick-look images. There are an additional 3565 similar images.

RAIDS NIRS 2009-11-29 1200-1330 UT



RAIDS NIRS 2010-09-28 0600-0730 UT

